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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/702,442	11/07/2003	Kon-Tsu Kin	KINK3004/EM	9705
23364	7590	05/15/2006	EXAMINER	
BACON & THOMAS, PLLC 625 SLATERS LANE FOURTH FLOOR ALEXANDRIA, VA 22314			CHEN, KIN CHAN	
			ART UNIT	PAPER NUMBER
			1765	

DATE MAILED: 05/15/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/702,442

Applicant(s)

KIN ET AL.

Examiner

Kin-Chan Chen

Art Unit

1765

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 10 April 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-3,5 and 7-9 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-3,5 and 7-9 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

**DETAILED ACTION**

***Continued Examination Under 37 CFR 1.114***

1. A request for continued examination (RCE) under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on April 10, 2006 has been entered.

***Response to Amendment***

2. The declaration under 37 CFR 1.132 filed April 10, 2006 is insufficient to overcome the rejection of claims as set forth in the last Office action because: The limitations stated in applicant's declaration (such as using ozone water to strip the photoresist at a given stripping rate) are not recited in the claims (for examples, claim 3 recites a photoresist or an organic containment; claim 8 recites pure water or ozone water). In fact, applicant's CFR 1.132 clearly shows that Groups II, III, and I are capable of stripping the photoresist and the prior art teaches stripping the photoresist.

*Claim Rejections - 35 USC § 103*

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

- (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1-3, 5, and 7-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Degendt et al. (US 2002/0011257 A1) in view of Muraoka et al. (US 6,696,228 B2) as evidenced by Kashiwase et al. (US 5,378,317).

In a method for treating a surface of a substrate, Degendt teaches that bubbles with a liquid and a gas may be formed on the surface of the substrate.

The gas bubbles may work to strip a substance from the surface of the substrate. The substance may be a photoresist or an organic contaminant on the surface of the wafer. See abstract; Fig. 8, [0092]-[0093]. Degendt teaches that the substrate may be immersed in the liquid contained in a bath as shown in Fig. 8, [0092]-[0093]. Degendt also teaches that the substrate may be not immersed in the liquid as shown in Fig. 3, [0086]-[0089]. Hence, it would have been obvious to one with ordinary skill in the art to use the combination thereof such that the substrate is only partially (e.g., bottom portions or outer edges of substrate) immersed in the liquid as instantly claimed because both of which have been used and be able to remove the resist and residues.

*"the nature of the problem to be solved" is the motivation to combine the references to arrive at the claimed invention because each reference was directed to the same problem of removing the resist and residues. In Ruiz v. A.B. Chance Co., 357 F.3d 1270, 69 USPQ2d 1686 (Fed. Cir. 2004); MPEP2143.01.*

Since the substrate is only partially (e.g., bottom portions or outer edges of substrate) immersed in the liquid as described above, given that same etchant (e.g., ozone water and a gas mixture containing ozone) is applied to the same process, **it is expected that the gas bubbles are allowed to ascend along the surface of the substrate, including the surface above the horizon of the liquid,** such that the gas bubbles work to strip a substance from the surface of the substrate.

*When the examiner has reason to believe that functional language asserted to be critical for establishing novelty in claimed subject matter may, in fact be an inherent characteristic of the prior art as discussed above, the burden of proof is shifted to the applicant to prove that the subject matter shown in the prior art does not possess the characteristics relied upon. Whether the rejection is based on "inherency" under 35 U.S.C. §102, or on "prima facie obviousness" under 35 U.S.C. §103, jointly or alternatively. In re Fitzgerald et al. 205 USPQ 594.*

Unlike the claimed invention, Degendt does not disclose that a plurality of the substrates which are equidistantly arranged and are parallel to one another. However, it is common in the art of wet processing of the substrates that a plurality of the substrates which are equidistantly arranged and are parallel to one another during the multiple-wafer treatment. Muraoka et al. (US 6,696,228 B2; Fig. 1) is only relied on to show this well-known feature, see also Kashiwase et al. (US 5,378,317, Figures) in the record as evidence. Because it is a well-known feature and because it is disclosed by Muraoka, hence, it would have been obvious to one with ordinary skill in the art to incorporate said well-known feature in the process of Degendt in order to improve the productivity of the wafer treatment. It is also noted that applicant did not traverse the aforementioned conventionality (e.g., well-known features, common knowledge), which have been stated in the previous office action (August 3, 2005; December 8, 2005).

The limitations of dependent claims 2, 3, 7, and 8 have been addressed above and rejected for the same reasons, *supra*.

As to claims 5 and 9, Degendt teaches the design for rotating treatment chamber [0077] may be applied in the process so as to rotate the substrates, see [0079] [0080]. Since the substrates, which are partially immersed in the liquid as described above, are rotated, it is expected that the outer edges of the substrates would be immersed in the liquid in rotation as instantly claimed.

***Response to Arguments***

5. Applicant's arguments filed April 10, 2006 have been fully considered but they are not persuasive.

Applicant has argued that the reference does not teach that the gas bubbles are allowed to ascend along the surface of the substrate, including the surface above the horizon of the liquid, such that the gas bubbles work to strip a substance from the surface of the substrate. It is not persuasive, As has been stated in the office action, since the substrate is only partially (e.g., bottom portions or outer edges of substrate) immersed in the liquid as described above, given that same etchant (e.g., ozone water and a gas mixture containing ozone) is applied to the same process, it is expected that the gas bubbles are allowed to ascend along the surface of the substrate, including the surface above the horizon of the liquid, such that the gas bubbles work to strip a substance from the surface of the substrate.

Applicant has argued that there is no motivation to combined two embodiments of Degendt. It is not persuasive. As stated in the office action, Degendt teaches that the substrate may be immersed in the liquid contained in a bath as shown in Fig. 8, [0092]-[0093]. Degendt also teaches that the substrate may be not immersed in the liquid as shown in Fig. 3, [0086]-[0089]. Hence, it would have been obvious to one with ordinary skill in the art to use the combination thereof such that the substrate is only partially (e.g., bottom portions or outer edges of substrate) immersed in the liquid as instantly claimed **because both of which have been used and be able to remove the resist and residues.**

*“the nature of the problem to be solved” is the motivation to combine the references to arrive at the claimed invention because each reference was directed to the same problem of removing the resist and residues. In Ruiz v. A.B. Chance Co., 357 F.3d 1270, 69 USPQ2d 1686 (Fed. Cir. 2004); MPEP2143.01.*

### *Conclusion*

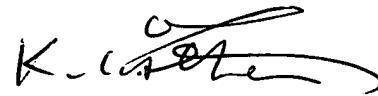
6. The prior art made of record (PTO-892, August 3, 2005) and not relied upon is considered pertinent to applicant's disclosure. Kashiwase et al. (US 5,378,317, Figures) show that a plurality of the substrates which are equidistantly arranged and are parallel to one another during the multiple-wafer treatment in the wet processing of the substrates.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kin-Chan Chen whose telephone number is (571) 272-1461. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nadine Norton can be reached on (571) 272-1465. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

May 11, 2006



Kin-Chan Chen  
Primary Examiner  
Art Unit 1765